

REMARKS

Claims 1, 4, 6, 7, 9-12 and 16-21 are pending. By this Amendment, no claims are cancelled, claims 1, 7, 11 and 12 are amended and no new claims are added.

Information Disclosure Statement

The February 23, 2010 Office Action stated the IDS filed 28 September 2009 has been considered with the exception of the Dutruc-Rosset reference on page 1 because it was not in English. Applicants respectfully note that as indicated on the first page of the Dutruc-Rosset reference, the reference is presented in three different languages with English presented on pages 21-39. As the Dutruc-Rosset reference has been provided in English, it is respectfully requested that the Dutruc-Rosset reference be expressly considered by the Examiner during the prosecution of the above-referenced application and the consideration of the Dutruc-Rosset reference be made of record by the Examiner.

Claim Rejections – 35 USC § 112

The February 23, 2010 Office Action rejected claims 1, 4, 6, 7 and 9-12 under 35 U.S.C. § 112, first paragraph, (i) as failing to comply with the written description requirement (paragraph 10), and not reasonably providing enablement for a method of modifying the expression of any gene encoding an outward potassium channel (paragraph 11). The Office Action stated that amending the phrase “an outward potassium channel (VvSOR)” in claim 1 with “the outward potassium channel encoded by SEQ ID NO: 1,” with similar amendments in claims 7, 11 and 12, would obviate both the written description and enablement rejections. As

claims 1, 7, 11 and 12 have been amended consistent with the Office Action, Applicants respectfully requested reconsideration and withdrawal of these rejections as moot.

Claim rejections – 35 USC § 103

Claims 1, 4, 6, 7 and 9-12 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Ishitani et al. (WO 01/45495) in view of Pratelli et al. (Accession AJ490336) and in further view of Pratelli et al. (2002, Plant Physiology 128: 564:577), Gaymard et al. (1998, Cell 94: 647-655) and Hale (1977, Vitis 16: 9-19). In response, Applicants have amended independent claims 7, 11 and 12 to further clarify the presently claimed invention and traverse the rejection.

While Pratelli et al. (Accession AJ490336) discloses the sequence of the encoding for the outward potassium channel, neither Pratelli et al. (Accession AJ490336) nor any of the other cited references, whether considered alone or in combination with any other cited reference, establish a *prima facie* case of obviousness.

As recently reiterated by the Federal Circuit, obviousness is not established where the prior art gives either no indication of which parameters are critical or no direction as to which of many possible choices is likely to be successful. *In re Kubin*, 562 F.3d 1351, 1359 (Fed. Cir. 2009). Similarly, obviousness is not established where the prior art gives only general guidance as to the particular form of the claimed invention or how to achieve it. *Id.* at 1359-60 (impermissible obviousness unless prior art contains detailed enabling methodology for practicing the claimed invention, a suggestion to modify the prior art to practice the claimed invention and evidence suggesting that it would be successful); *See also* MPEP 2143 (G), p. 2100-138 (there must be an articulated finding that there was some teaching, suggestion, or motivation, either in the references themselves or in the knowledge generally available to one of

ordinary skill in the art, to modify the reference or combine reference teachings). Here, the cited references do not provide the requisite information to establish a *prima face* case of obviousness. Simply, there is not even general guidance in the cited references between the gene encoding for the outward potassium channel, the potassium content in the cells and the effect on the size or tartrate composition of a storage organ, much less a motivation to use the gene encoding the outward potassium channel encoded by SEQ ID NO: 1 to effect the size or tartrate composition of a storage organ.

Instead, Ishitani et al. (WO 01/45495 A2) provides information on the effects of over/under-expression of an AKT1-like potassium (K⁺) channel originating from the moss *Physcomitrella* in a plant. The effect reported is a modulation of the plant tolerance to drought-, salt- or temperature-induced stress. Thus, as admitted in the Office Action, Ishitani et al. fails to teach, disclose or suggest a gene encoding a *Vitis vinifera* outward potassium channel, much less a gene encoding a *Vitis vinifera* outward potassium channel encoded by SEQ ID NO: 1, or having any effect on the size or organic acid composition of a storage organ.

Pratelli et al. (2002, Plant Physiology 128:564-577) reports about the molecular characterization of a grape SIRC INWARD potassium channel, expressed transiently in berries, preferentially in guard cells, and suggests a role in regulating stomatal aperture and berry transpiration or potassium transport and potassium loading into the berries. Pratelli et al. does not teach, disclose or suggest any role of an OUTWARD potassium channel in the berry.

Gaymard et al. (1998, Cell 94:647-655) demonstrates that an Arabidopsis defective mutant plant disrupted in the SKOR gene, which encodes an OUTWARD potassium channel expressed in the root stele, can be complemented by the transgenic expression of a functional

SKOR potassium channel, with restoration of potassium translocation into the root stele xylem sap and transport towards the aerial parts (leaves). These results demonstrate that SKOR plays a role in potassium secretion into the xylem sap. This type of strategy (identification of a mutant plant disrupt in the gene under investigation, analysis of the mutant plant phenotype and restoration of the wild type plant phenotype (restoration) by transformation of the mutant plant with a construct allowing expression of the gene under investigation) is common. Gaymard et al., however, does not teach, disclose or suggest on the possible effects of the (transgenic) expression of a potassium channel in a wild type plant non defective in potassium secretion into the xylem sap.

Hale (1977, Vitis 16/9-19) discloses the existence of an (indirect) correlation between berry potassium content and malic acid content in maturing grapes, but specifically found no correlation with tartaric acid. Specifically, Hale discloses that no differences between the tartrate contents of high- and low-K grapes were detected at any time (table 1, page 12). Hale also describes the changes in tartrate are less important than those for malic acid and did not correlate with the potassium content in the berries (page 13, under "Experiment 2"). Finally, Hale describes that "no relationship between potassium and tartrate in ripe berries was seen" (page 18, summary paragraph). Thus, Hale cannot reasonably be considered to teach, disclose or suggest that an increase in potassium contents would improve the tartrate composition of grape berries. To the contrary, the teachings of Hale would have been dissuasive to one of ordinary skill in the art and taught away from the presently claimed invention.

Also, "under KSR, it remains necessary to identify some reason that would have led a chemist to modify a known compound in a particular manner to establish *prima facie*

obviousness of a new claimed compound.” *P&G Co. v. Teva Pharms USA, Inc.*, 566 F.3d 989, 994 (Fed. Cir. 2009) (citing *Takeda Chem. Indus., Ltd. v. Alphapharm Pty., Ltd.*, 492 F.3d 1350, 1357 (Fed. Cir. 2007)). But, the “rejections on obviousness cannot be sustained with mere conclusory statements; instead, there must be some articulated reasoning with some rational underpinning to support the legal conclusion of obviousness.” *In re Kahn*, 441 F.3d 977, 998 (Fed. Cir. 2006); *KSR*, 550 U.S. 398. Here, the “articulated reason” is “to transform a grape plant.” There is no rational underpinning for the reason to “transform a grape” much less the motivation, rational, or reasoning of transforming a grape plant specific to a gene encoding the outward potassium channel encoded by SEQ ID NO: 1.

Thus, for at least these reasons, a *prima facie* case of obviousness has not been established. Instead, the conclusory rational supporting the obviousness rejection based upon combining or modifying the cited references can only be the result of impermissible hindsight. Accordingly, Applicants respectfully request reconsideration and withdrawal of the rejections.

In view of the foregoing, it is submitted that this application is in condition for allowance. Favorable consideration and prompt allowance of the application are respectfully requested.

The Examiner is invited to telephone the undersigned if the Examiner believes it would be useful to advance prosecution.

Respectfully submitted,



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